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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/552,677

11/21/2005

Rudolf Beckmann

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EXAMINER

FORD, NATHAN K

ART UNIT

PAPER NUMBER

1712

NOTIFICATION DATE

DELIVERY MODE

03/23/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

nyipdocket@fulbright.com

Office Action Summary	Application No. 10/552,677	Applicant(s) BECKMANN, RUDOLF	
	Examiner NATHAN K. FORD	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-28 and 30-55 is/are pending in the application.
- 4a) Of the above claim(s) 44-53 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26-28, 30-43, 54 and 55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Applicant's Response

Acknowledged is the applicant's after-final response filed February 28, 2011. Claims 26 and 36 are amended.

The applicant's arguments are convincing, and the previous rejections have been withdrawn accordingly. However, upon further search, new rejections are submitted below.

In addition, the applicant's special use of *divergent* is noted. Henceforth, the examiner will interpret the claimed feature of a *divergently formed plasma beam* as a beam which deviates from the main direction of the plasma radiation.

Claim Interpretation

By employing *means* for language, the applicant invokes USC 112, sixth paragraph.

Regarding claim 26, the "electrical means for igniting and sustaining the plasma" will be interpreted as being inclusive of both electrical connections and a high-frequency transmitter according to paragraph twenty-four of the applicant's specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 26-27, 30-32, 36, 39, 41-42, and 54-55 are rejected under 35 U.S.C. 102(b) as being anticipated by Davis et al., US 5,198,718.

Claims 26-27, 30, 54-55: Davis teaches the following (Fig. 1):

- A high frequency plasma beam source (4) (8, 59-68);
- A plasma volume (5);
- Electrical means for igniting and sustaining the plasma comprising a high-frequency transmitter (12) and electrical connections (48) (10, 27-30);
- An extraction grid (6) disposed in the area of an outlet opening (9, 60ff);
 - Wherein the extraction grid bows inward relative to the extraction direction of the plasma (Fig. 1).

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Claims 31-32, 36: Davis situates a biased, second grid (30) outside of the plasma volume (5) (9, 60ff). As this grid performs the function of plasma filtering, the examiner is considering the component to properly constitute a mask.

Claim 39: Figure 1 of Davis delineates multiple gas sources (11, 33) which inlet to the reaction chamber. At least one of these sources can be used to provide a gas having a composition and temperature that would beget evaporation, as a recitation concerning the manner in which a claimed apparatus is to be employed does not differentiate the apparatus from prior art satisfying the claimed structural limitations (*Ex parte Masham*, 2 USPQ2d 1647).

Claim 41: Davis employs magnets (16) for plasma confinement (9, 15-41).

Claim 42: Davis's system further comprises a vacuum chamber housing (2) and a surface (9) to be irradiated (8, 59-68).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28, 37-38, and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Betz et al., US 5,656,141.

Davis's substrate support is substantially planar. Betz, however, distributes a plasma beam across multiple substrates arranged on a domed surface (30) to facilitate a consistent and equal coating process (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to arrange the substrate support surface of Davis as a domed surface to achieve the predictable result of improving the regularity of the plasma distribution.

Claims 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Oechsner, US 5,156,703.

Claim 33: Davis is silent regarding the dimension of the extraction grid. In supplementation, Oechsner teaches a plasma beam source comprising a chamber for plasma (7), an extraction grid (1), and electrical means (3, 5) to ignite the plasma. The extraction grid is a mesh structure whose width and dimension are configured as changeable to

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achieve the desired plasma distribution; however, it is prescribed that the mesh openings be smaller than the space charge layer to facilitate particle permeability (9, 12-22). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to configure the apertures of Davis's extraction grid to have a smaller width than the space charge zone. Lastly, as Oeschner attests, it would also be obvious to one of ordinary skill to fashion Davis's grid as a mesh, given that it is well-known in the art to extract plasma particles through a mesh grid.

Claims 34-35: It should be noted that Oeschner demonstrates the dependence of the width of the space charge zone upon manipulatable factors such as current and voltage (6, 1-10). Thus, the exact value of the space charge zone is drawn to how the operator intends to use the apparatus, and it is the examiner's position that only a nominal modification of the inputs would be required to achieve an equivalency between the thickness of the space charge zone and the width of the mesh openings. Further, in determining the proper relationship between mesh width and space charge zone thickness, it would have been obvious to one of ordinary skill to seek a range of values of the space charge zone through routine experimentation, as it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (*In re Boesch*, 617 F.2d 272, 205 USPQ 215).

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Adler, US 4,587,430.

Davis is silent regarding the composition and width of the extraction grid. Adler discloses an ion implantation device comprising a non-planar extraction grid (26) consisting of tungsten and having a width of 1 mm; tungsten is capable of withstanding significant heat loading due to ion bombardment, and a small mesh width minimizes ion losses to the extraction grid (4, 66ff). For these reasons, it would have been obvious to one of ordinary skill in the art at the time the invention was made to compose Davis's extraction grid of tungsten and to configure its width to be 1 mm.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan K. Ford whose telephone number is 571 270 1880. The examiner can normally be reached on M-F, 8:30-5:00 EDT. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland, can be reached at 571 272 1418. The fax phone number for the organization where this application or proceeding is assigned is 571 273 8300.

/N. K. F./

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/Karla Moore/

Primary Examiner, Art Unit 1716